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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,011	03/14/2002	William John Macklin	MACKLIN-03211	4530
7590 06/06/2006			EXAMINER	
Law Offices of William H. Holt 12311 Harbor Drive Woodbridge, VA 22192			MERCADO, JULIAN A	
			ART UNIT	PAPER NUMBER
			1745	
DATE MAILED: 06/06/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

10/069,011

Applicant(s)

MACKLIN ET AL.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 8-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Remarks***

This Office action is responsive to applicant's amendment filed March 9, 2006.

Claims 1-12 are pending. Please refer to the Claim Objections section outlined below.

This Office action presents a new ground of rejection and is therefore made NON-FINAL.

### ***Claim Objections***

Claims 8 and 9 are objected to because of the following informalities:

1. The version of the claims submitted on October 31, 2005 recites claims 8 and 9 in duplicate. It is suggested to renumber the last sequence of claims 8-10 as claims 10-12.

For purposes of claim discussion, the last sequence of claims 8-10 are addressed as claims 10-12.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The rejection of claims 1-10 under 35 U.S.C. 103(a) based on Miyabayashi et al. and Zhou et al. (U.S. Pat. 6,280,697 B1) has been withdrawn.

Applicant's arguments filed with the present amendment have been fully considered. To this extent, the examiner acquiesces with applicant's assertion that Miyabayashi et al. (in combination with Zhou et al.) is absent in teaching an alloy-forming metal or metalloid inside the

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nanotubes. As set forth in the prior Office action, Zhou et al. that “[c]onsiderable amounts of  $\text{Li}^+$  ions can readily diffuse into these structurally damaged SWNTs through the opened ends, and perhaps through other defect sites, to give an enhanced capacity.” See col. 4 line 24-29 and col. 6 line 52-59. Upon further consideration,  $\text{Li}^+$  ions are not deemed readable on the claimed metal or metalloid elements, nor would the corresponding elemental Li metal read on the claimed Markush group consisting of aluminum, alloys thereof or silicon.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(new rejection)

Claims 1-3 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fetcenko et al. (U.S. Pat. 6,177,213 B1).

Fetcenko et al. teaches an electrode having a conductive network which comprises “a plurality of conductive particles which are at least partially embedded....” See col. 8 line 1 et seq. The conductive particles are metallic. See col. 7 lines 59-60. The conductive network may comprise carbon nanotubes. See col. 8 lines 32-33. The conductive particles comprise aluminum and tin, *inter alia*. See col. 10 line 58 et seq.

In applying Fetcenko et al. towards the present claims, the examiner notes that the claimed “for a rechargeable cell” in the preamble of claim 1 has been interpreted as a statement of intended use which does not further limit the claim with additional structure. As a result, the

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claimed ability to form “alloys reversibly with lithium” is not considered to give breadth and scope to the claims, absent of a positive recitation of lithium in order for the metal or metalloid to alloy therewith.

While Fetcenko et al.’s disclosure may be drawn to a positive electrode, i.e. a cathode, given that the disclosed battery is a secondary battery, the skilled artisan would find obvious that during the charge cycle, the positive electrode (cathode) functions as a negative electrode, and vice-versa. During the charge cycle, the cathode would therefore function as a negative electrode (anode) in order for the direction of electron flow to be reversed as compared to that during the discharge cycle. Absent of unexpected results, the designation of an electrode as either an anode or cathode is considered to merely follow conventional practice and terminology in view of its function during the discharge cycle. An electrode’s function as either a cathode or anode is deemed entirely dependent on the secondary battery’s state of charge.

#### ***Allowable Subject Matter***

Claims 4-6 and 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record and to the examiner’s knowledge do not teach or suggest the instant invention regarding a rechargeable lithium cell having an anode comprised of carbon nanotubes, the nanotubes forming alloys reversibly with lithium and containing a metal or metalloid inside the tubes.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



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PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER